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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/735,608	12/14/2000	Hiroshi Hatano	325772020700	5784

25227 7590 07/20/2004
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 300
MCLEAN, VA 22102

EXAMINER

CHU, KIM KWOK

ART UNIT PAPER NUMBER

2653

DATE MAILED: 07/20/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/735,608

Applicant(s)

HATANO, HIROSHI

Examiner

Kim-Kwok CHU

Art Unit

2653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5,9-13 and 17 is/are rejected.
- 7) ☒ Claim(s) 6-8,14-16 and 18-20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claim Objections

1. Claim 9 is objected to because of the following informalities:

(a) in claim 9, last two line, the term ".reproduced" should be changed to "--reproduced--".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless --
(e) the invention was described in a patent granted on
an application for patent by another filed in the
United States before the invention thereof by the
applicant for patent, or on an international
application by another who has fulfilled the
requirements of paragraphs (1), (2), and (4) of
section 371(c) of this title before the invention
thereof by the applicant for patent.*

3. Claims 1-5 and 9-13 are rejected under 35 U.S.C. § 102(e) as being anticipated by Lee et al. (U.S. Patent 6,266,315).

Lee teaches an optical head having all of the elements and means as recited in claims 1-5. For example, Lee teaches the following:

(a) as in claim 1, a light source 61 for emitting light (Fig. 6);

(b) as in claim 1, a reflection converging optical system 51 which includes a solid immersion lens 53 essentially made of a light-transmitting medium (Fig. 3C; lens 53 is an example of solid immersion lens 2 as illustrated in Fig. 1; column 1, lines 42-52);

(c) as in claim 1, the reflection converging optical system 51 reflects the light emitted from the light source and taken in the solid immersion lens 53 to converge the light onto a boundary portion of the solid immersion lens 53 (Fig. 3C; boundary portion is the peripheral part of the lens 53);

(d) as in claim 1, the reflection converging optical system 51 comprising a first reflection surface 515 for reflecting the light that has been emitted from the light source 61 and taken in the reflection converging optical system 51 (Fig. 3C);

(e) as in claim 1, the reflection converging optical system 51 comprising a second reflection surface 513 for further reflecting the light reflected by the first reflection surface 515 and for converging the light onto the boundary/peripheral portion of the solid immersion lens 53 (Fig. 3C; column 8, lines 20-60);

(f) as in claim 2, the light emitted from the light source 61 is taken in the first reflection surface sideways with respect to a light-converging axis of the reflection converging optical

system (Fig. 6; the emitted light is traveling sideways before it is reflected by the first reflection surface);

(g) as in claim 3, the first reflection surface 515 and the second reflection surface 513 are formed on a reflection member that is installed separately from the solid immersion lens 53 (Fig. 3C; lens 53 is a different optical component and therefore it is separately installed to the reflection members);

(h) as in claim 4, the first reflection surface 515 is formed on a surface of the solid immersion lens 53 (Fig. 3C; surface 515 is formed on the surface of lens 53);

(i) as in claim 4, the second reflection surface 513 is formed on a reflection member that is installed separately from the solid immersion lens 53 (Fig. 3C); and

(j) as in claim 5, the first reflection surface 515 and the second reflection surface 513 are formed on the solid immersion lens (Fig. 3C).

4. Claims 9-13 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claim 9 however also recites the following limitations which is also taught by the prior art of Lee:

(a) as in claim 9, a signal processing section 71 for processing a recording signal to the recording medium (Fig. 6; light detector 71 is a signal processing/detecting device).

5. Claim 17 is rejected under 35 U.S.C. § 102(e) as being anticipated by Lee (U.S. Patent 6,266,315).

Lee teaches a solid immersion lens having all of the elements and means as recited in claim 17. For example, Lee teaches the following:

- (a) as in claim 17, the solid immersion lens 50 is a light-transmitting medium (Fig. 3C);
- (b) as in claim 17, a first reflection surface 515 for reflecting light taken in the immersion lens 50 (Fig. 3C);
- (c) as in claim 17, a second reflection surface 513 for further reflecting the light reflected by the first reflection surface 515 (Fig. 3C); and
- (d) as in claim 17, the second reflection surface 513 converging the light onto the boundary portion 53 of the solid immersion lens 50 (Fig. 3C; boundary portion is the bottom surface 53 as in Applicant's specification, on page 28, lines 6 and 7).

Allowable Subject Matter

6. Claims 6-8, 14-16 and 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claims 6, 14 and 18 the prior art fail to teach or fairly suggest the following feature:

(a) the solid immersion lens comprises a bottom surface and an outer curved surface defining an outer shape thereof, and an inner curved surface that is placed inside the solid immersion lens; and

(b) the light that has been made incident on the solid immersion lens through the incident section is reflected by the first reflection surface placed on the inner curved surface, and further reflected by the second reflection surface placed on the outer curved surface, and then converged on a center area of the bottom surface.

As in claims 7, 15 and 19, the prior art fail to teach or fairly suggest the following features:

(a) the solid immersion lens has an upper surface and a bottom surface, the upper surface has an incident section for

transmitting incident light onto the solid immersion lens and a reflection section serving as the second reflection surface, the bottom surface has a reflection section serving as the first reflection surface on a peripheral area of the bottom surface, the incident section being placed on a peripheral area on the upper surface so that the light that has been made incident on the solid immersion lens through the incident section is reflected by the first reflection surface placed on the peripheral area of the bottom surface, and further reflected by the second reflection surface placed on a center area of the upper surface, and then converged on a center area of the bottom surface.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over the prior art of record.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ueyanagi (6,359,852) is pertinent because Ueyanagi teaches a near-field optical head having reflective surface.

Kubota et al. (6,256,154) is pertinent because Kubota teaches an optical head having reflective surfaces.

Sato (6,236,514) is pertinent because Sato teaches an optical head having reflective surfaces.

Chen (6,212,153) is pertinent because Chen teaches an optical head having reflective surfaces.

Medina Puerta et al. (5,638,219) is pertinent because Medina Puerta teaches an optical with multiple reflective mirrors.

Chuang et al (6,064,517) is pertinent because Chuang teaches a high NA system having reflective surfaces.

9. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks Washington, D.C.
20231 Or faxed to:

(703) 872-9306 (for formal communications intended for
entry. Or:

(703) 746-6909, (for informal or draft communications,
please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park
II, 2021 Crystal Drive, Arlington. VA., Sixth Floor
(Receptionist).


Any inquiry of a general nature or relating to the status of
this application should be directed to the Group receptionist
whose telephone number is (703) 305-4700.

Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Kim CHU
whose telephone number is (703) 305-3032 between 9:30 am to 6:00
pm, Monday to Friday.

7/7/04

Kim-Kwok CHU
Examiner AU2653
July 7, 2004

(703) 305-3032


WILLIAM KORZUCH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600